3GPP TSG RAN Meeting #71
Göteborg, Sweden, March 7 - 10, 2016
RP160564

RP-160633
revision of

Source: **CMCC**
Title: **Study on Context Aware Service Delivery in RAN for LTE**
Document for: **Approval**
Agenda Item: **10.1.3**

3GPP™ Work Item Description

For guidance, see 3GPP Working Procedures, article 39; and 3GPP TR 21.900.
Comprehensive instructions can be found at http://www.3gpp.org/Work-Items

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Title: **Study on Context Aware Service Delivery in RAN for LTE**

Acronym:

Unique identifier:

NOTE: If this is a RAN WID including Core and Perf. part, then Title, Acronym and Unique identifier refer to the feature WI. Please tick (X) the applicable box(es) in the table below:

This WID includes a Core part	
This WID includes a Performance part	

1 3GPP Work Area

X	**Radio Access**
	Core Network
	Services

2 Classification of WI and linked work items

2.0 Primary classification

This work item is a …

X	**Study Item (go to 2.1)**
	Feature (go to 2.2)
	Building Block (go to 2.3)
	Work Task (go to 2.4)

NOTE: Core, Performance and Testing parts of RAN WIs are usually Building Blocks. If you are in doubt, please contact MCC.

2.1 Study Item

Related Work Item(s) (if any)		
Unique ID	**Title**	**Nature of relationship**

Go to §3.

2.2 Feature

Related Study Item or Feature (if any)		
Unique ID	**Title**	**Nature of relationship**

Go to §3.

2.3 Building Block

Parent Feature (or Study Item)		
Unique ID	**Title**	**TS**

This work item is …

	Stage 1 (go to 2.3.1)
	Stage 2 (go to 2.3.2)
	Stage 3 (go to 2.3.3)
	Test spec (go to 2.3.4)
	Other (go to 2.3.5)

2.3.1 Stage 1

Source of external requirements (if any)		
Organization	**Document**	**Remarks**

Go to §3.

2.3.2 Stage 2

Corresponding stage 1 work item		
Unique ID	**Title**	**TS**

Other source of stage 1 information		
TS or CR(s)	**Clause**	**Remarks**

If no identified source of stage 1 information, justify:

Go to §3.

2.3.3 Stage 3

Corresponding stage 2 work item (if any)		
Unique ID	**Title**	**TS**

Else, corresponding stage 1 work item		
Unique ID	**Title**	**TS**

Other justification		
TS or CR(s) or external document	**Clause**	**Remarks**

If no identified source of stage 2 information, justify:

Go to §3.

2.3.4 Test spec

Related Work Item(s)		
Unique ID	**Title**	**TS**

Go to §3.

2.3.5 Other

Related Work Item(s)			
Unique ID	**Title**	**Nature of relationship**	**TS / TR**

Go to §3.

2.4 Work task

Parent Building Block		
Unique ID	**Title**	**TS**

3 Justification

Operators are facing more and more challenges in providing mobile broadband services due to high-data rate and low latency requirements and also due to network backhaul link constraint:

- Long E2E delay to deliver mobile content due to e.g. multi-hop data forwarding may constitute a problem in some transport network conditions.
- High Service load in the backhaul and CN (e.g., PDN GW and SGW) due to centralized node deployment in case of under-dimensioning.

These constraints may negatively affect the various user services. Based on network deployment scenario, operators may look to solutions to address these constraints and satisfy various user service requirements, for experiential enhancements.

Voice was the major service and 3GPP defined voice specific cross-layer optimizations for 3G and 4G. Web based streaming video and Apps are expected to take majority of 4G/5G bandwidth, and are key source to further increase the ARPU for operators. MPEG and 3GPP SA4 have been considering cross-layer optimizations by RAN and App mutual aware, e.g. network assisted DASH, video-aware scheduling. ETSI MEC is working on mobile video delivery optimization and local content caching. It is worthwhile and right time to study whether deep cross-layer optimizations for Web based streaming video and Apps can deliver the desired benefits. It is also worthwhile to take into account the related work in other SDOs/Working groups, e.g. ETSI MEC work on mobile video delivery optimization and local content caching.

There are already some network based proprietary solutions for above. These network solutions either require extensive DPI for user plane packets or private interface to content server. It could be studied whether UE assistance can enable more efficient cross-layer optimizations and caching.

In addition, these solutions may be difficult for operators with multiple network vendors to deploy and operate. Therefore, to fill the gap between current LTE network capability and the diverse user service requirements in future network, to further study the Context Aware Service Delivery in RAN is proposed.

4 Objective

4.1 Objective of SI or Core part WI or Testing part WI

The objective of the study item is to:

- Study and if possible identify the use cases and requirements for *Context Aware Service Delivery*
  - For more efficient use of resources and better user experience (e.g., saving battery life, shorter E2E delay, and etc);
- Study and analyse the potential impact to architecture, protocol, and signalling to support Context Aware Service Delivery in E-UTRA
  - How E-UTRAN could acquire service specific information;
  - How E-UTRAN could support RAN based local cached delivery, local breakout;
  - How E-UTRAN could support RAN optimizations based on context awareness.

Coordination with RAN2 may be required. Coordination with SA2, SA3 and SA4 may be required if needed.

Note: The related work in other SDOs/Working groups, e.g. ETSI MEC may be taken into account during this study. Duplication should be avoided.

4.2 Objective of Performance part WI

NOTE: Leave empty if the WI proposal does not contain a RAN performance part.

4.3 RAN time budget proposal

NOTE: For WIs/SIs under RAN WG5 leadership this section is not filled out. Otherwise: For a not yet approved WI/SI the rapporteur has to fill out the last row of the table(s) below up to the target date of the WI/SI (if necessary add further tables): Indicate the number of time units (1 TU ~ 2h), i.e. one value for each session/field. If no time unit is needed, leave the field empty.
For WI/SI already approved in the past, the tables below will no longer be updated in the WI/SI description (i.e. the tables reflect the status of the initial approval). But changes can be proposed in the status report of the WI/SI.

RAN #71 Q2/2016 RAN #72																			
R1L	R1U	R2L	R2U	R2J	R3	R4RF Core	R4RD Core	R4RF Perf	R4RD Perf	R1L	R1U	R2L	R2U	R2J	R3	R4RF Core	R4RD Core	R4RF Perf	R4RD Perf
84bis	84bis	93bis	93bis	89bis	91bis	78bis	78bis	78bis	78bis	85	85	94	94	90	92	79	79	79	79
					1.5										**1.5**				

RAN #72 Q3/2016 RAN #73									
R1L	R1U	R2L	R2U	R2J	R3	R4RF Core	R4RD Core	R4RF Perf	R4RD Perf
86	86	95	95	91	93	80	80	80	80
					1.5				

RAN #73 Q4/2016 RAN #74																			
R1L	R1U	R2L	R2U	R2J	R3	R4RF Core	R4RD Core	R4RF Perf	R4RD Perf	R1L	R1U	R2L	R2U	R2J	R3	R4RF Core	R4RD Core	R4RF Perf	R4RD Perf
86bis	86bis	95bis	95bis	91bis	93bis	80bis	80bis	80bis	80bis	87	87	96	96	92	94	81	81	81	81
		0.5			**0.5**										**0.5**				

RAN #74 Q1/2017 RAN #75									
R1L	R1U	R2L	R2U	R2J	R3	R4RF Core	R4RD Core	R4RF Perf	R4RD Perf
88	88	97	97	89	95	82	82	82	82

L: LTE, U: UMTS, J: Joint, RD: RRM/demodulation

NOTE: In case further explanation of the time budget proposal is needed, then please explain this below.

additional comments to the time budget proposal:

5 Service Aspects

6 MMI-Aspects

7 Charging Aspects

Work may be addressed as part of different study in TSG SA.

8 Security Aspects

9 Impacts

Affects:	**UICC apps**	**ME**	**AN**	**CN**	**Others**
Yes			X		
No					
Don't know	X	X		X	X

10 Expected Output and Time scale

New specifications [If Study Item, one TR is anticipated]

Spec No.	Title	1st rsp. WG	2nd rsp. WG(s)	Presented for information at plenary#	Approved at plenary #	Comments
TR 36.xxx	Study on Context Aware Service Delivery in RAN for LTE	RAN WG 3		RAN#73	RAN#74	

NOTE: If this is a RAN WID including Core and Perf. part, then all new Core part specs have to be listed first and then all new Perf. part specs. Indicate "Core part" or "Perf. part" under Comments for each spec.
By default a new specs can only be new for one of both parts.

Affected existing specifications [None in the case of Study Items]

Spec No.	CR	Subject of the CR	Approved at plenary#	Comments

NOTE: If this is a RAN WID including Core and Perf. part, then all new Core part specs have to be listed first and then all new Perf. part specs. Indicate "Core part" or "Perf. part" under Comments for each spec.
If an existing spec is affected by both (Core part and Perf. part), then it has to be listed twice with appropriate approval dates.

11 Work item rapporteur(s)

Company:CMCC
Email: jinba@chinamobile.com

12 Work item leadership

Primary: RAN3

NOTE: If this is a RAN WID including Core and Perf. part, then this WG specifies the WG leading the Core part.
RAN WG4 is by default leading the Perf. part.

13 Supporting Individual Members

Supporting IM name
CMCC
AT&T
CATR
CATT
Coolpad
Deutsche Telekom
MediaTek
Motorola Mobility
NEC
HiSilicon
Huawei
Intel
InterDigital
KDDI
Lenovo
LG Electronics
OPPO
Nokia
Potevio
Qualcomm Incorporated
Samsung
TIM
US Cellular
Verizon
ZTE